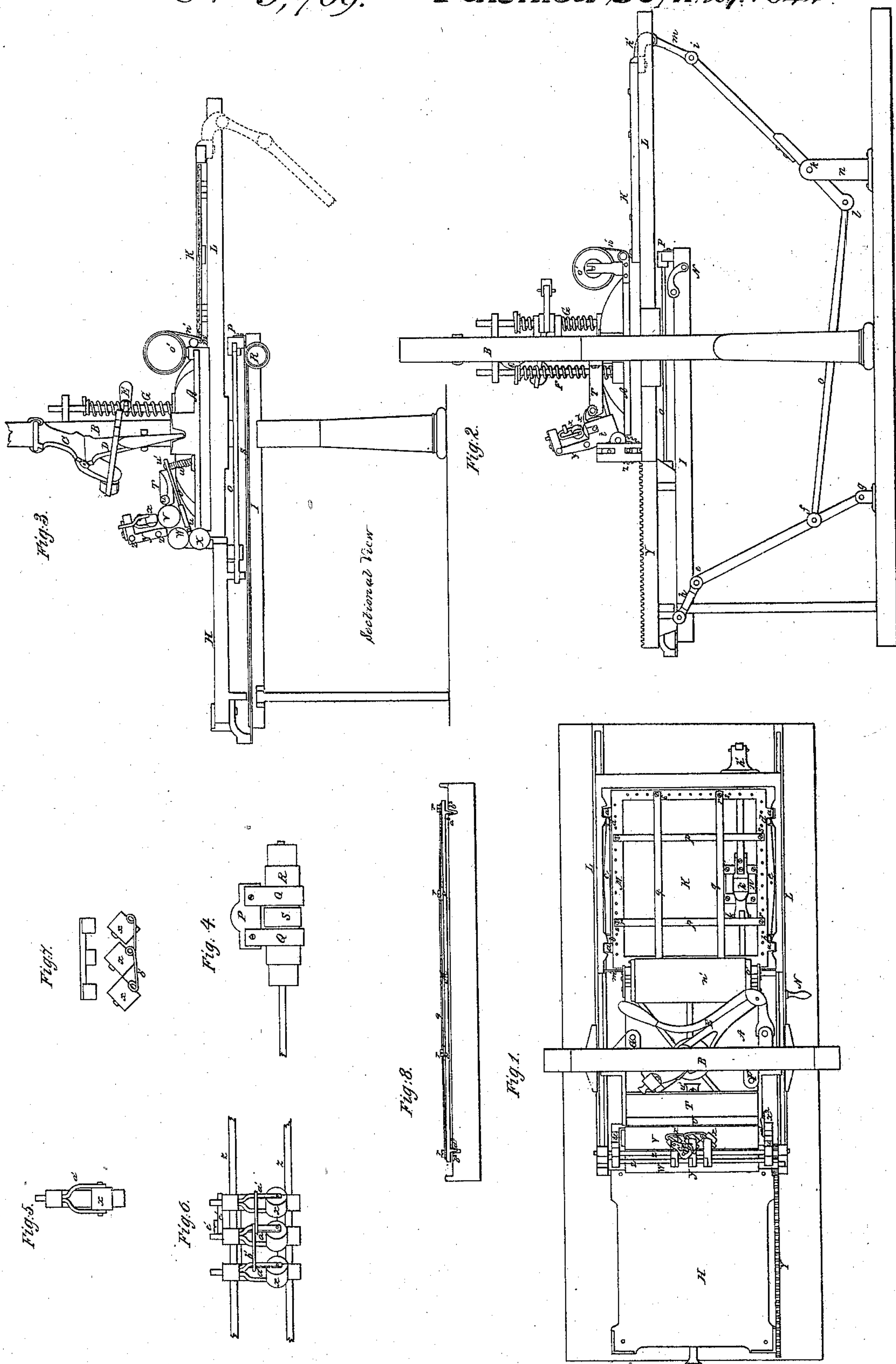


S. Adams.
Printing Press.
N^o 3,769. Patented Sept. 27. 1844.



UNITED STATES PATENT OFFICE.

SETH ADAMS, OF BOSTON, MASSACHUSETTS.

PRINTING-PRESS.

Specification of Letters Patent No. 3,769, dated September 27, 1844.

To all whom it may concern:

Be it known that I, SETH ADAMS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Hand Printing-Presses, and that the following description and accompanying drawings, taken in connection, constitute a full and exact specification of the construction and operation of my invention.

Figure 1 of the drawings above mentioned represents a top view of my improved printing machine. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal, vertical and central section of the same.

A, (Figs. 1, 2 and 3,) represents the platen, and B the metallic arch or frame within which the pressure is given during the process of printing. The platen is disposed in a horizontal position as in ordinary hand printing presses and is actuated or forced downwardly by a system of toggle joints arranged between it and the top of the interior of the metallic arch, and so as to operate according to any of the known methods in general use.

In the drawings C and D denote the said toggles or progressive levers; and E the hand lever by which, in connection with other mechanism, they are drawn by the workman into a straight line with each other. The platen is raised, in the usual manner, by springs F, G, properly connected to the same and the metallic arch. The bed or table upon which the chase containing the form of type is usually placed is seen at H, in the position it takes when the frisket is being supplied with paper to be printed or when a printed sheet is to be removed from the frisket. The bed slides in or under the platen and out or from beneath the same upon a railway I, constructed like those in common use in hand presses, but extending from the metallic arch in the opposite direction from that in which it usually does; that is to say, instead of the bed coming out from beneath the platen, on the side of the metallic arch on which the lever E is situated it runs out in an opposite direction as seen in the drawings. The frisket frame or carriage is denoted at K. It consists of a suitable rectangular frame of metal supported at its sides upon guide rails L, L, so as to slide freely back and forth in a longitudinal direction, or toward and from the platen. The frisket M is sus-

tained upon its frame K by means of four ears *a, a, a, a*, (two of which extend from each side of it) which rest upon the ends of springs *b c d, b c d*, whose central parts *c, c* are attached to the sides of the frisket frame as seen in the drawing. The guide rails which support the frisket frame, should be of such length as will permit it to be moved so far as to carry the frisket entirely underneath and out from the platen; and the said rails should have such an elevation with respect to the lower face of the platen as will just permit the frisket and sheet of paper and the tympan sheet or cloth to run freely underneath the platen without disturbing the position of the paper on the frisket. The rails which support the bed should be placed at such an elevation as will fairly allow the bed to be run in underneath the frisket without bringing the inked form of type into contact with the frisket or sheet of paper laid thereon to be printed. It will therefore be seen that the bed and frisket frame approach and recede from each other and the platen, and at the termination of each movement toward each other and the platen the frisket is brought directly over the bed (or form of type thereon) and beneath the platen, and into the proper position for the platen to descend upon it and press it and the paper down toward the bed; and so as to bring the paper into contact with the inked surface of type, and thus imprint the said paper. The horizontal movements of the bed and frisket frame are produced by means of the rounce N. A long rod O extends horizontally from the front end of the platen (as seen in Fig. 3) and terminates in a cross head P, (see Fig. 4 which exhibits an end view of the cross head P and rounce barrel beneath it) from each end of the front side of which one of two straps Q, Q is secured and wound upon a rounce barrel or windlass R, according to the mode generally practiced in the hand printing press. The rounce and its barrel are sustained, in the usual manner, by bearings or boxes suitably applied to the railway I, at or near the front ends of the same, or in the position as seen in the drawings. Another strap S is attached at one end to the middle of the barrel R and between the straps Q, Q and is connected with the bed in the usual manner; or, instead of the said rounce barrel and straps a long toothed rack may be applied to the bed so

as to extend from the same and be operated by a toothed pinion applied upon the crank or rounce shaft.

The mechanism which causes the frisket frame to advance and recede within its rails is constructed and arranged in the following manner. A long lever *e, f, g*, Fig. 2, is connected at its top with the underside of the bed, by means of a connecting link *h*, jointed both to the bed and lever *e f g*. The lower end *g* of the lever is jointed to the floor so that as the bed moves to and fro longitudinally it will draw the top *e* of the lever alternately in one direction and the opposite. The frisket frame has a projection *h'* extending from its front and as seen in Figs. 1 and 2, and in the latter partly by dotted lines. To the said projection *h'* a lever *i k l* is connected by a link *m* jointed to both, the said lever turning in a fulcrum or joint (at *k*), in the top of a suitable standard or supporting frame *n*. A connecting rod *o* extends from the lower end *l* of the lever *i k l* to the point *f* of the lever *e f g*, as seen in Fig. 2; the said rod *o* being jointed to both the levers and in such manner as when the lever *e f g* is moved forward by the bed (when the same advances toward the platen) it shall cause the lower end of the lever *i k l* to move forward and thereby throw its upper end toward the platen so as to move the frisket frame toward the platen and carry the frisket into its proper position over the bed of type. The frisket frame was described as being rectangular. In this respect it is constructed very much like that of a common hand press. To the rod *m'* which extends across its inner end and constitutes the same, one end of a piece of cloth *n'* is attached the other end thereof being attached to a drum *o'* upon which the said cloth winds as the frisket passes out from beneath the platen, and from which it unwinds and is carried under the platen as the motion of the frisket is reversed. The axis of the drum is sustained upon the front end of the platen. A pulley and string and weight or any other suitable contrivance may be connected to the axis of the drum and arranged so as to cause it to turn around and wind the cloth *n'* upon it whenever the frisket frame is run out. The frisket has a series of transverse and longitudinal bars or thin strips of steel extending across it from side to side and end to end as seen at *p, p, q, q*, in Fig. 1. The ends of the said bars are confined to the frisket by means of small screws *r, r, r*, &c., which pass through holes in the ends of the bars and are screwed into the frisket as seen at *s, s, s*, &c., the said screw holes being at about one half an inch apart (more or less as circumstances may require) from center to center. It is upon these bars that the sheet of paper to be

printed is laid and supported, the said bars being arranged at such distances apart as will bring them between the pages of type upon the bed whenever an impression is given. Any number of the said bars may be employed as may be necessary for different kinds of book work and wherever the sheet can be conveniently supported between the bars without injury to the impression, tapes or strings may be stretched across the frisket and secured in the screw holes or in other holes of another series bored through the frisket to receive them.

The next portion of the machinery is that by which the form of type is inked and which is generally termed the inking apparatus. In my press it is situated and supported just in rear of the platen and partly above the same as seen in the drawings, *T* being the ink fountain which is secured in any proper manner to the metallic arch so as to be stationary in position. *U* is the ductor roller of the fountain. *V* is the vibrating distributing roller which takes the ink from the fountain roller *U* and lays it upon another distributing roller *W* resting upon the top of a roller *X* which (latter) rolls upon the form of type as the bed is moved out and in and imparts ink to the said form. A toothed rack *Y* of the length of the bed is secured to one side of it as seen in Figs. 1 and 2. This rack engages with a toothed pinion *Z* fixed upon the axis of the ink roller *X* and therefore as the bed is moved back and forth, it (the rack) imparts a reciprocating revolving motion to the inking roller. The journals of both rollers *W* and *X* run in bearings which will admit the first of them to rest freely upon the other and to rise or fall (as circumstances may require) while the latter is in contact with and inking the form of type. The united weight of the rollers is thus applied to press the latter of them upon the form. The distributing roller *V* is arranged in a frame *t* which vibrates on journals or supporting centers at each end (as at *u, u*, Figs. 1, 2) and so that when vibrated or drawn forward it shall cause the surface of the roller *V* to come in contact with that of the ductor or fountain roller and when carried back to come into contact with and roll against and be revolved by the roller *W*.

In order to move the roller *V* up against the ductor roller of the fountain, an arm *v* (Fig. 3) extends from the bottom of the frame *t* in a direction toward and over the platen as seen in the drawing, and this arm is connected to the top of the platen by means of a screw *w'* which passes through a cylindrical hole bored through the end of the arm and is screwed into the top of the platen. A helical spring *w* is placed upon the screw shank between the platen and the

underside of the arm v , and when the platen is at its highest elevation the said spring acts so as to press the end of the arm upward and thereby carry and hold the roller V in contact with the roller W. When the platen is forced down to give an impression it will cause the end of the arm v (attached to it) to descend and thus draw the roller V toward and in contact with the ductor roller. A small click or fall w^2 fixed upon the frame of the roller V comes in contact with a toothed ratchet wheel on one extremity of the axis of the ductor roller and thereby turns the said ductor roller a short distance in its bearings whenever the platen descends.

For lateral distribution of the ink I make use of one, two, three or more short rollers x, x, x , which rest upon the top of the roller V and are supported in a frame y , sustained in position by two rods z, z , extending horizontally across from one end of the frame of the roller V to the other, the same being formed or extended upward sufficiently to receive the rods. The frame of the lateral distributor traverses back and forth upon these rods. The axes of the several lateral distributors are arranged parallel to each other and in angular positions with respect to the axis of the roller V upon which the said distributors rest. They are all to be so connected together that the said angular positions of their axes may be readily varied with respect to the axis of the roller V (whenever necessary) and still maintain their parallelism to each other. Now, as the roller V (as well as each of the other rollers in rear of it) has a motion imparted to it alternately in one direction and in the opposite (the same being produced by the movements of the bed both in and out) the lateral distributors will all be caused to move upon the top of the roller V from one end of it to the other and then back again, and will keep continually moving back and forth upon the roller either from one end to the other of it and back or from any point of its surface between its center and end to a corresponding point on the opposite side of the center thereof (according to the angle which their axes make with the axis of the roller V,) so long as the bed is kept in motion both in toward and beneath the platen and out from the same. Each of the lateral distributors is sustained by its journals working in bearings formed in the lower ends of what may be termed the prongs of a fork a' , see Figs. 5, 6 and 7, the former of which is a view of one of the forks and its roller as detached from the others, and the second (or Fig. 6) is a front view of the rollers, etc., as resting upon the roller V and the latter (or Fig. 7) is a horizontal section of the forks taken just above the rollers and through their connecting wire.

The shanks of these several forks are supported in the frame y so as to easily turn around horizontally. The forks are connected by a wire b' , one end of which embraces the prong of the first of the three forks, while the middle also embraces the corresponding prong of the second fork, and the other end of the wire that of the third fork as seen in Fig. 7. The shank of the first fork, where it projects above the top of the frame y , has a metallic sector arm c' fitted upon it which has a curved slot d' cut in it as seen in Fig. 1, through which slot a confining screw e' passes into the frame y in such manner and so arranged as to confine the sector in any desirable position so as to vary the angles of the axes of the lateral distributors with respect to the axis of the roller V.

In order to aid in the production of what printers term correct "register" and to always insure the proper position of the frisket with respect to the bed (or forms of type thereon) when an impression is being given a small conical projection a^3 may extend downward vertically from each corner of the frisket and have a corresponding hole, drilled through the corner of the bed, to receive it. When the platen descends it forces these points or projections into their holes and thus insures the correct position of the frisket at the time of the impression. A longitudinal section of the frisket and the points or projections a^3 , together with the bed and the conical holes for receiving the projection are represented in Fig. 8, b^3, b^3 , being two of the said conical holes.

Having thus explained the nature and principles of my invention that which I claim therein is as follows,—viz:

1. I claim my particular mode of arranging and operating the bed (with or without its form of type) platen, frisket frame (with or without its frisket) and inking apparatus with respect to each other; not meaning in the above to claim the mechanical devices adopted to produce their respective movements, but the manner in which they are all arranged and operate together or in combination with each other the said arrangement and operation of the parts consisting (1st) in placing the platen in line between the bed and frisket frame (when the frisket frame is out or in the position to receive a sheet of paper to be printed) and somewhat above the same, (2nd) in causing the bed and frisket frame to be moved toward each other and the platen and beneath the platen, and so as to carry the frisket (containing the sheet of paper) directly under the platen and over the form of type on the bed—and after imprinting the sheet of paper reversing the movements of the bed and frisket frame so as to cause them to recede from each other and the platen and to come into

their first position, viz, such a position as will enable the operative or operatives of the press to remove the printed sheet of paper and supply its place with one to be printed; and (3d) in disposing the inking apparatus directly in rear of or upon the rear part of the platen, and so that as the bed passes out from beneath the platen and in or below the same the said inking apparatus shall ink the form of type as hereinbefore set forth.

2. I also claim the combination of levers connecting rods and links in their application to the bed and frisket frame in the manner as set forth, and for the purpose of producing the required movements of the frisket frame through those of the bed.

3. I also claim the manner by which I am enabled to produce the reciprocating rectilinear lateral movements of the distributors x, x, x , upon the roller V beneath them

without using any apparatus such as is generally applied to the said lateral distributors for changing their angular positions with respect to the roller beneath them—so as to cause them to travel upon it, from one end of it to the other end, in an opposite direction: viz, by arranging the main distributing rollers with respect to the roller by which the type is inked, and the said inking roller with respect to the bed as described; the peculiar back and forth motions of the lateral distributors from end to end of the roller V being in this manner obtained from the inking roller—which has never been so effected in any printing machine which has ever come to my knowledge.

SETH ADAMS.

Witnesses:

R. H. EDDY,
JOHN NOBLE.